UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,851	08/22/2003	Rui Liang	10830.0097NP	1500

27927   7590   01/24/2007

RICHARD AUCHTERLONIE
NOVAK DRUCE & QUIGG, LLP
1000 LOUISIANA
53RD FLOOR
HOUSTON, TX 77002

EXAMINER
KEEFER, MICHAEL E

ART UNIT	PAPER NUMBER
2109	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/24/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-49* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-49* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____ .

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

DETAILED ACTION

1.   This action is responsive to the Application filed on 19 August 2003.

Specification

2.   The lengthy specification has not been checked to the extent necessary to

determine the presence of all possible minor errors. Applicant's cooperation is

requested in correcting any errors of which applicant may become aware in the

specification.

3.   The use of the trademarks "NFS", "UNIX", "Linux", "Microsoft Windows" and

"iSCSI" has been noted in this application. They should be capitalized wherever they

appear and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the

proprietary nature of the marks should be respected and every effort made to prevent

their use in any manner which might adversely affect their validity as trademarks.

4.   The disclosure is objected to because of the following informalities:

On page 11, line 18, the number "87", which follows the word "file" should

be deleted and replaced with the number --84-- to agree with the drawings.

On page 14, line 17, the number "53" should be deleted and replaced with

the number --52-- to agree with the drawings.

On page 15, line 13, the phrase "(21 in FIGS. 11 and 12)." refers to

drawings that do not have an item number 21; it is suggested that the phrase be

deleted and replaced with --21.-- so that the item number agrees with the

drawings.

On page 16 line 16, it appears that a patent application serial number was left out of the specification.

On page 18, line 12, the phrase "FIG. 6)." Should be deleted and replaced with the phrase --FIG. 7).-- to agree with the drawings. In addition, the number "80" should be deleted and replaced with --100-- and the number "81" should be deleted and replaced with --101--.

Appropriate correction is required.

Claim Objections

5.   Claims 2, 5, 6-7, 8-10, 12-13, 17-19, 20, and 48 are objected to because of the following informalities:

Regarding **claim 2**, it is suggested that the word "SCSI" at the end of line 1 be deleted and replaced with the phrase --Small Computer System Interface (SCSI)-- to improve the clarity of the claim.

Regarding **claim 5**, it is suggested that the phrase --the step of-- be inserted between the words "includes" and "the" in line 1 of the claim improve the clarity of the claim.

It is also suggested that the phrase --the step of-- be inserted between the words "with" and "the" in line 2 of the claim improve the clarity of the claim.

Regarding **claim 6**, it is suggested that the phrase --the step of-- be inserted between the words "initiates" and "the" in line 3 of the claim improve the clarity of the claim.

Regarding **claim 8**, it is suggested that the phrase --the step of-- be inserted between "includes" and "the" in line 1 of the claim.

It is also suggested that the phrase -step of-- be inserted between "the" and "writing" in line 1 of the claim.

It is additionally suggested that the phrase --performing the step of-- be inserted at the beginning of line 3 of the claim, before the word "initiating" improve the clarity of the claim.

Regarding **claim 9**, it is suggested that the word "claim1," in line 1 of the claim be deleted and replaced with the phrase --claim 1,--.

It is additionally suggested that the phrase --the step of-- be inserted between the words "includes" and "the" in line 1 of the claim improve the clarity of the claim.

Regarding **claim 10**, it is suggested that in line 2 the word "NFS." be deleted and replaced with --Network File System (NFS).-- to improve the clarity of the claim.

Regarding **claim 11**, it is suggested that in line 2 the word "CIFS." be deleted and replaced with --Common Internet File System (CIFS).-- to improve the clarity of the claim.

Regarding **claim 12**, it is suggested that the phrase --step of the-- be inserted at the end of line 2 of the claim improve the clarity of the claim.

Regarding **claim 13**, it is suggested that the phrase --the step of-- be

inserted between the words "includes" and "the" in line 3 of the claim improve the

clarity of the claim.

Regarding **claim 17**, it is suggested that the phrase --the step of-- be

inserted between "includes" and "the" in line 1 of the claim.

Regarding **claim 18**, it is suggested that the phrase --step of-- be inserted

between "the" and "copying" in line 3.

Regarding **claim 20**, it is suggested that the phrase --the step of-- be

inserted between the words "includes" and "the" in line 1.

It is further suggested that the phrase --performs the step of-- between the

words "client" and "initiating" in line 3 of the claim.

Regarding **claim 48**, it is suggested that the word "bock-level" in line 1 of

the claim be deleted and replaced with the word --block-level--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

7.   Claims 5-8, 10-12, 17-20, 22-23, 30-32, 35, and \37-49 are rejected under 35

U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and

distinctly claim the subject matter which applicant regards as the invention.

Regarding **claim 5**, the claim is unclear where the file server is copying

the file.

Claims 6-8 are rejected as being dependent upon rejected claim 5.

Regarding **claims 10, 22, 35 and 45** the use of the trademark "NFS" is indefinite since it has not been previously defined.

Regarding **claims 11-12 and 22-23**, the use of the trademarks "UNIX", "Linux" and "Windows" are indefinite since they have not been previously defined.

Regarding **claim 17**, the word "data" in line 3 of the claim is confusing because it is unclear whether it refers to a different data than is referred to in claim 14.

In addition the claim is unclear where the file server is copying the file.

Claims 18-20 are rejected for being dependent on rejected claim 17.

Regarding **claim 30**, the phrase "a client" appearing in lines 2-3 of the claim is confusing, as multiple clients are defined in claim 24; if this recitation of "a client" refers to one of the multiple clients in claim 24, it should read as --one of said clients--.

Additionally, the word "data" in line 3 of the claim is confusing because it is unclear whether it refers to a different data than is referred to in claim 24.

In addition, it is unclear where the file server is copying data.

Regarding **claim 31**, in addition to being rejected as being dependent upon rejected claim 30, is rejected because the word "data" in lines 2 and 5 of the claim are confusing because it is unclear whether they refer to a different data than is referred to in claim 24 and 30.

Claim 32 is rejected as being dependent upon rejected claims 30-31.

Regarding **claim 37**, the word "client" in line 9 of the claim is confusing because it is recited as singular, when plural clients are recited in line 4 of the claim.

Claims 38-49 are rejected as being dependent upon rejected claim 32.

Claim 43 is additionally rejected because the word "data" in line 2 of the claim is confusing because it is unclear whether it refers to a different data than is referred to in claim 37.

Claim 48 is additionally rejected because the use of the trademark "iSCSI" is indefinite.

Claim Rejections - 35 USC § 101

8.   35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-4 and 9-13 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Regarding **claim 1**, which is directed to a method of access to a storage object in a file server. In order for an invention to be statutory it must produce a useful, concrete and tangible result. In this case, the result is useful and concrete but is not tangible. The mere act of accessing a storage object does not produce any "real world" result.

Claims 2-4 and 9-13, which are dependent on claim 1 fail to add any tangible result to the method and are thus rejected for the same.

Claim Rejections - 35 USC § 102

9.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10.   Claims 1-5, 9-17, 21-27, 30, and 34-36 are rejected under 35 U.S.C. 102(e) as

being anticipated by Chen et al. (US 7076509 B1) hereafter Chen.

Regarding **claim 1**, Chen (US 7076509) discloses:

In a data processing network including a client (Fig. 5, Clients 560a

and/or 506b) and a file server (Fig. 5, Multi-protocol Storage Appliance

500), a method of access to a storage object (vdisk or LUN, Col 10 line 1)

in the file server, said method comprising: the client using a block level

access protocol (Col 9 Lines 40-42, "clients 560 generally use block-based

access protocols") over the network (Fig. 5, 585 or 565) to access the

storage object; and the file server accessing the storage object by

accessing a file (Col 10, lines 56-60, the file server accesses the vdisk to

access the data on the volume) containing data of the storage object.

Regarding **claim 2 as applied to claim 1**, Chen (US 7076509) discloses:

wherein the storage object is a virtual SCSI direct access storage

device (Col 12 Lines 55-60, a vdisk is a virtual access storage device,

which may be accessed via an SCSI interface), and the block level access

protocol is SCSI (Col 9, Lines 40-42 state that a common access protocol

for clients is SCSI).

Regarding **claim 3 as applied to claim 1**, Chen (US 7076509) discloses:

wherein the storage object is a logical volume (Col 10 line 1, LUN is

a logical unit (volume) number that defines a logical volume).

Regarding **claim 4 as applied to claim 3**, Chen (US 7076509) discloses:

wherein the logical volume is raw, sliced, striped, or concatenated

(Col 12 lines 30-32 and Col 13 lines 39-42, note that the volume can

implement many RAID protocols, of which slicing, striping and

concatenating are subsets of.).

Regarding **claim 5 as applied to claim 1**, Chen (US 7076509) discloses:

which includes the file server copying the file concurrent with the

client using the block level access protocol over the network to write data

to the storage object (Col. 13, lines 43-49 describe the inherent snapshot

capabilities of Chen's invention, and point to incorporated reference Hitz et

al. (US 5,819,292) for more explanation: Col. 1 lines 26-32 of Hitz et al.

describe that backups occur on servers with "active file systems" meaning

that writing or reading activity can be simultaneous with any kind of

copying.)

Regarding **claim 9 as applied to claim 1**, Chen (US 7076509) discloses:

which includes the file server also providing access to the storage

object over the network by means of a file access protocol over the

network, the file access protocol accessing the file containing the data of

the storage object (Col 11, lines 15-20 it is disclosed that Chen is operable

with both block-based and file-based protocols, i.e. "providing an

integrated NAS and SAN appliance", as NAS appliances use file-based

protocols.).

Regarding **claims 10-11 as applied to claims 1 and 9**, Chen (US

7076509) discloses:

wherein the client uses a UNIX or Linux operating system, and the

file access protocol is NFS. (Col. 9 lines 15-18, state that a client using the

UNIX (or Linux) operating system may use the NFS protocol to

communicate.)

wherein the client uses a Windows operating system, and the file

access protocol is CIFS. (Col. 9 lines 12-15, state that clients using the

Windows operating system may communicate using CIFS)

Regarding **claim 12 as applied to claim 1**, Chen (US 7076509)

discloses:

wherein the file containing the data of the storage object also

contains attributes of the storage object, and the method includes the file

server accessing the attributes of the storage object when the client uses

the block level access protocol over the network to access the storage

object. (Col. 10, lines 43-47 states that a vdisk is a special file (singular) type.)

Regarding **claim 13 as applied to claim 1**, Chen (US 7076509)

discloses:

wherein the file containing the data of the storage object is in a file system which includes another file containing attributes of the storage object, and the method includes the file server accessing the attributes of the storage object when the client uses a block level access protocol over the network to access the storage object. (Col 10 lines 47-56 describe that an embodiment of a vdisk may have one file (stream) containing metadata and other files in the file system (streams) would have data.)

Regarding **claim 14**, Chen (US 7076509) discloses:

In a data processing network including a client (Clients 560a and/or 506b) and a file server (Multi-protocol Storage Appliance 500), a method of access to a virtual direct access storage device (Col 12 Lines 55-60) in the file server, attributes and data of the virtual direct access storage device (Col 10, lines 56-60, the file server accesses the vdisk to access the data on the volume) being stored in at least one file in the file server (Col. 10, lines 43-47 states that a vdisk is a special file type.), said method comprising:

the client using a block level access protocol (Col 9 Lines 40-42) over the network to access the virtual direct access storage device in the

file server, the file server responding to commands in accordance with the

block level access protocol for access to the virtual direct access storage

device by accessing the attributes and data of the virtual direct access

storage device; and

the file server providing access over the network to the virtual block

storage device in accordance with a file access protocol by accessing said

at least one file in the file server. (Col. 9 lines 12-18)

Regarding **claims 15-16 as applied to claim 14**, Chen (US 7076509)

discloses:

wherein the attributes and data of the virtual direct access storage

device are stored together in a single file. (Col. 10, lines 43-47 states that

a vdisk is a special file (singular) type.)

wherein the attributes and data of the virtual direct access storage

device are stored in separate files in a common file system. (Col 10 lines

47-56 describe that an embodiment of a vdisk may have one file (stream)

containing metadata and other files in the file system (streams) would

have data.)

Regarding **claim 17 as applied to claim 14**, Chen (US 7076509)

discloses:

which includes the file server copying the data of the virtual direct

access storage device concurrent with the client using the block level

access protocol over the network to write data to the virtual direct access

storage device. (Col. 13, lines 43-49 describe the inherent snapshot capabilities of Chen's invention, and point to incorporated reference Hitz et al. (US 5,819,292) for more explanation: Col. 1 lines 26-32 of Hitz et al. describe that backups occur on servers with "active file systems" meaning that writing or reading activity can be simultaneous with any kind of copying.)

Regarding **claim 21 as applied to claim 14**, Chen (US 7076509)

discloses:

wherein the network is an IP network, and the block level access protocol is SCSI. (Col 9, lines 56-59, note that iSCSI, an implementation of a block level access protocol (SCSI) over TCP (TCP/IP, or an IP network)

Regarding **claims 22-23 as applied to claim 14**, Chen (US 7076509)

discloses:

wherein the client uses a UNIX or Linux operating system, and the file access protocol is NFS. (Col. 9 lines 15-18, state that a client using the UNIX (or Linux) operating system may use the NFS protocol to communicate.)

wherein the client uses a Windows operating system, and the file access protocol is CIFS. (Col. 9 lines 12-15, state that clients using the Windows operating system may communicate using CIFS)

Regarding **claim 24**, Chen (US 7076509) discloses:

A network file server (Fig. 6, 600) comprising:

data storage; (Fig. 6, Disks connected to Disk driver 650)

an interface for coupling the data storage to a data network;

(Fig. 6, Media access 610) and

at least one processor programmed for permitting clients in

the data network to access the data storage in accordance with a

plurality of access protocols; (inherent, as multiple protocols are

disclosed (Col. 9 lines 12-18, therefore a processor must be

present and programmed to allow clients to use those protocols)

the data storage containing at least one file for storing file

attributes and for storing metadata defining a virtual direct access

storage device and for storing data of the virtual direct access

storage device; (Fig. 6, File system 665 and/or VDISK module 670)

the access protocols including at least one block level

access protocol for access to the virtual direct access storage

device by accessing the metadata and data of the virtual direct

access storage device (Fig. 6, FC 630, iSCSI 628); and

the access protocols including at least one file access

protocol for accessing said at least one file. (Fig. 6, NFS 620, CIFS

622)

Regarding **claims 25-26 as applied to claim 24**, Chen (US 7076509)

discloses:

wherein the metadata includes attributes of the virtual direct access

storage device, and the attributes of the virtual direct access storage

device and the data of the virtual direct access storage device are stored

together in a single file. (Col. 10, lines 43-47 states that a vdisk is a

special file (singular) type.)

wherein the metadata includes attributes of the virtual direct access

storage device, and the attributes of the virtual direct access storage

device and the data of the virtual direct access storage device are stored

in separate files in a common file system. (Col 10 lines 47-56 describe that

an embodiment of a vdisk may have one file (stream) containing metadata

and other files in the file system (streams) would have data.)

Regarding **claim 27 as applied to claim 24**, Chen (US 7076509)

discloses:

wherein the metadata includes attributes of the virtual direct access

storage device and the attributes of the virtual direct access storage

device specify an internal organization of the virtual direct access storage

device. (See Fig. 7, which shows the various ways metadata, is stored in a

file to describe the vdisk.)

Regarding **claim 30 as applied to claim 24**, Chen (US 7076509)

discloses:

which includes a snapshot copy facility for copying the data of the

virtual direct access storage device concurrent with a client using the

block level access protocol over the network to write data to the virtual

direct access storage device. (Col. 13 lines 43-46 disclose a snapshot

system)

Regarding **claim 34 as applied to claim 24**, Chen (US 7076509)

discloses:

wherein the network is an IP network, and the block level access

protocol is SCSI. (Col 9, lines 56-59, note that iSCSI, an implementation of

a block level access protocol (SCSI) over TCP (TCP/IP, or an IP network)

Regarding **claims 35-36 as applied to claim 24**, Chen (US 7076509)

discloses:

wherein the file access protocol is NFS. (Col. 9 lines 15-18, state

that a client using the UNIX (or Linux) operating system may use the NFS

protocol to communicate.)

wherein the file access protocol is CIFS. (Col. 9 lines 12-15, state

that clients using the Windows operating system may communicate using

CIFS)

Claim Rejections - 35 USC § 103

11.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set
forth in section 102 of this title, if the differences between the subject matter sought to be patented and
the prior art are such that the subject matter as a whole would have been obvious at the time the
invention was made to a person having ordinary skill in the art to which said subject matter pertains.
Patentability shall not be negatived by the manner in which the invention was made.

12.   Claims 6-8, 18-20, and 31-32 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Chen et al. (US 7076509 B1) as applied to claims 1, 5, 14, 17, 24,

and 30 above, and further in view of VERITAS Backup Exec for Windows Servers™

Administrator's Guide hereafter VERITAS.

Regarding **claims 6, 18, and 31,**

Chen et al. (US 7076509 B1) discloses all the limitations of claims

6, 18, and 31 except that the client initiates the copying over a second

TCP/IP connection.

The general concept of a client initiating a command over a

separate TCP/IP connection is well known in the art as taught in VERITAS

(pg. 39 first paragraph, the administration console can be run via the

Backup Exec Media server, which can be a client of the storage devices

as shown in the figure "How Backup Exec Works".)

It would have been obvious to one of ordinary skill in the art at the

time of the invention to modify Chen et al. (US 7076509 B1) by adding the

general concept of a remote client issuing a command over a separate

TCP/IP connection as taught by VERITAS in order to centralize backup

functions for a network containing many different databases and

computers requiring backup.

Regarding **claims 8 and 20,**

Chen et al. (US 7076509 B1) and VERITAS disclose all the

limitations of claims 8 and 20 except for the client pausing the writing of

data after a commit, and the client initiating the copying of the file by

sending the command.

The general concept of pausing write assess to a file so that it may

be copied is well known in the art as taught by VERITAS (pg. 956

'Snapshot Support', in the first paragraph it teaches that writing activity

must be momentarily suspended so that a snapshot may be taken).

It would have been obvious to one of ordinary skill in the art at the

time of the invention to modify Chen et al. (US 7076509 B1) and

VERITAS with the general concept of pausing write access to a file so that

it may be copied in order to backup constantly used files as also taught by

VERITAS in order to protect the integrity of the data.

13.   Claims 7, 19, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Chen et al. (US 7076509 B1) and VERITAS as applied to claims 1, 5, 14, 17, 24,

and 30 above, and further in view of Banerjee (US 2002/0199000 A1).

Regarding **claims 7, 19, and 32**,

Chen et al. (US 7076509 B1) and VERITAS disclose all the

limitations of claims 7, 19, and 32 except that the two TCP/IP connections

are concurrent.

The general concept of two TCP/IP connections to different ports

being concurrent is well known in the art as taught by Banerjee. (Banerjee

teaches a method for managing the transfer of data in parallel over

multiple sockets, see abstract)

It would have been obvious to one of ordinary skill in the art at the

time of the invention to modify Chen et al. (US 7076509 B1) and

VERITAS with the general concept that TCP/IP connections can be

concurrent as taught by Banerjee in order to make the system more

efficient and scalable.

14.   Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et

al. (US 7076509 B1) as applied to claims 24 and 27 above, and further in view of

Busser (US 2002/0095616 A1).

Regarding **claim 28,**

Chen et al. (US 7076509 B1) discloses all the limitations of claim

28 except for that the attributes of the device specify an internal

organization that includes a RAID level.

The general concept of storing RAID level information in metadata

files is well known in the art as taught by Busser ([0029] "The disk

metadata 100 contains data that the controller uses to assist in the

operation and management of the RAID system.").

It would have been obvious to one of ordinary skill in the art at the

time of the invention to modify Chen et al. (US 7076509 B1) with the

general concept of storing RAID level information in metadata files in order

to make information about the RAID level more available to users of the

file system.

15.   Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et

al. (US 7076509 B1) as applied to claims 24 and 27 above, and further in view of Tichy

et al. (US 2006/0101025 A1) hereafter Tichy.

Regarding **claim 29**,

Chen et al. (US 7076509 B1) discloses all of the limitations of claim

29 except that the attributes of the device specify an internal organization

that includes a striping pattern.

The general concept of storing striping information in metadata files

is well known in the art as taught by Tichy ([0116], where the default

layout, involving striping file blocks is stored in a metadata manager).

It would have been obvious to one of ordinary skill in the art at the

time of the invention to modify Chen et al. (US 7076509 B1) with the

general concept of storing striping pattern information in metadata files in

order to make information about the striping pattern more available to

users of the file system.

16.   Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et

al. (US 7076509 B1) as applied to claim 24 above, and further in view of Chen et al.

(US 7010553 B2).

Regarding **claim 33**,

Chen et al. (US 7076509 B1) discloses all the limitations of claim

33 except for the network file server including an IP replication facility.

The general concept of backing files up over a network is well

known in the art as taught by Chen et al. (US 7010553 B2) (Col. 3 lines

14-20 "a mirror is established and stored in a remote site").

It would have been obvious to one of ordinary skill in the art at the

time of the invention to modify Chen et al. (US 7076509 B1) with the

general concept of backing files up over a network as taught by Chen et

al. (US 7010553 B2) in order to "improve reliability and facilitate disaster

· recovery." ('553 Col. 3 lines 14-15)

17.   Claims 37-40 and 45-49 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Chen et al. (US 7076509 B1) and Chen et al. (US 7010553 B2).

Regarding claims **37-40 and 45-48**, Chen et al. (US 7076509 B1)

discloses:

A network file server (Fig. 6, 600) comprising:

data storage; (Disks connected to Disk driver 650)

an interface for coupling the data storage to a data network;

(Media access 610) and

at least one processor programmed for permitting clients in

the data network to access the data storage in accordance with a

plurality of access protocols; (inherent)

the data storage containing at least one file for storing file

attributes and for storing metadata defining a virtual direct access

storage device and for storing data of the virtual direct access

storage device; (File system 665 and/or VDISK module 670)

the access protocols including at least one block level

access protocol for access to the virtual direct access storage

device by accessing the metadata and data of the virtual direct

access storage device (FC 630, iSCSI 628); and

the access protocols including at least one file access

protocol for accessing said at least one file. (NFS 620, CIFS 622)

wherein the metadata includes attributes of the virtual direct

access storage device, and the attributes of the virtual direct

access storage device and the data of the virtual direct access

storage device are stored together in a single file. (Col. 10, lines 43-

47 states that a vdisk is a special file (singular) type.)

wherein the metadata includes attributes of the virtual direct

access storage device, and the attributes of the virtual direct

access storage device and the data of the virtual direct access

storage device are stored in separate files in a common file system.

(Col 10 lines 47-56 describe that an embodiment of a vdisk may

have one file (stream) containing metadata and other files in the file

system (streams) would have data.)

wherein the metadata includes attributes of the virtual direct

access storage device and the attributes of the virtual direct access

storage device specify an internal organization of the virtual direct

access storage device. (See Fig. 7, which shows the various ways

metadata, is stored in a file to describe the vdisk.)

wherein the at least one file access protocol includes NFS.

(Col. 9 lines 12-18)

wherein the at least one file access protocol includes CIFS.

(Col. 9 lines 12-18)

wherein the block-level access protocol includes the iSCSI

protocol. (Col 9, lines 56-59)

wherein the block-level access protocol includes the SCSI

protocol. (Col 9, lines 40-42)

which includes a snapshot copy facility for creating snapshot

copies of said at least one file. (Col. 13 lines 43-46 disclose a

snapshot system)

Chen et al. (US 7076509 B1) discloses all the limitations of claims

37-40 and 45-48 except for a facility for remote replication of at least one

file over an IP network and that the remote replication facility is used to

replicate snapshots.

The general concept of a facility for backing files up over a network

is well known in the art as taught by Chen et al. (US 7010553 B2) (Col. 3

lines 14-20 "a mirror is established and stored in a remote site" In addition,

'553 teaches that the file backed up maybe a snapshot file in Col. 3 lines 25-30).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Chen et al. (US 7076509 B1) with the general concept of backing files up over a network as taught by Chen et al. (US 7010553 B2) in order to "improve reliability and facilitate disaster recovery." ('553 Col. 3 lines 14-15)

18.   Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US 7076509 B1) and Chen et al. (US 7010553 B2) as applied to claims 37 and 40 above, and further in view of Busser.

Regarding **claim 41**,

Chen et al. (US 7076509 B1) and Chen et al. (US 7010553 B2) disclose all the limitations of claim 28 except for that the attributes of the device specify an internal organization that includes a RAID level.

The general concept of storing RAID level information in metadata files is well known in the art as taught by Busser ([0029] "The disk metadata 100 contains data that the controller uses to assist in the operation and management of the RAID system.").

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Chen et al. (US 7076509 B1) and Chen et al. (US 7010553 B2) with the general concept of storing RAID level

information in metadata files in order to make information about the RAID

level more available to users of the file system.

19.   Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et

al. (US 7076509 B1) and Chen et al. (US 7010553 B2) as applied to claims 37 and 40

above, and further in view of Tichy et al. (US 2006/0101025 A1), hereafter Tichy.

Regarding **claim 42**,

Chen et al. (US 7076509 B1) and Chen et al. (US 7010553 B2)

disclose all the limitations of claim 42 except for that the attributes of the

device specify an internal organization that includes a striping pattern.

The general concept of storing striping information in metadata files

is well known in the art as taught by Tichy ([0116], where the default

layout, involving striping file blocks is stored in a metadata manager).

It would have been obvious to one of ordinary skill in the art at the

time of the invention to modify Chen et al. (US 7076509 B1) and Chen et

al. (US 7010553 B2) with the general concept of storing striping pattern

information in metadata files in order to make information about the

striping pattern more available to users of the file system.

20.   Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et

al. (US 7076509 B1) and Chen et al. (US 7010553 B2) as applied to claim 37 above,

and further in view of VERITAS.

Regarding **claim 43**,

Chen et al. (US 7076509 B1) and Chen et al. (US 7010553 B2)

teach all the limitations of claim 43 except for the initiation of the

replication being done by the client over a second TCP/IP connection.

The general concept of a client initiating a command over a

separate TCP/IP connection is well known in the art as taught in VERITAS

(pg. 39 first paragraph, the administration console can be run via the

Backup Exec Media server, which can be a client of the storage devices

as shown in the figure "How Backup Exec Works".)

It would have been obvious to one of ordinary skill in the art at the

time of the invention to modify Chen et al. (US 7076509 B1) and Chen et

al. (US 7010553 B2) with the general concept of a remote client issuing a

command over a separate TCP/IP connection as taught by VERITAS in

order to centralize backup functions for a network containing many

different databases and computers requiring backup functions.

21.   Claim 44 is rejected under 32 U.S.C. 103(a) as being unpatentable over Chen et

al. (US 7076509 B1) , Chen et al. (US 7010553 B2), and VERITAS as applied to claims

37 and 43 above, and further in view of Banerjee.

Regarding **claim 44**,

Chen et al. (US 7076509 B1) , Chen et al. (US 7010553 B2), and

VERITAS disclose all the limitations of claim 44 except that the two

TCP/IP connections are concurrent.

The general concept of two TCP/IP connections to different ports

being concurrent is well known in the art as taught by Banerjee. (Banerjee

teaches a method for managing the transfer of data in parallel over

. multiple sockets, see abstract)

It would have been obvious to one of ordinary skill in the art at the

time of the invention to modify Chen et al. (US 7076509 B1) , Chen et al.

(US 7010553 B2), and VERITAS with the general concept that TCP/IP

connections to can be concurrent as taught by Banerjee in order to make

the method more efficient.

Conclusion

22.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Michael E. Keefer whose telephone number is (571)

270-1591. The examiner can normally be reached on Monday-Thursday 8am-5pm,
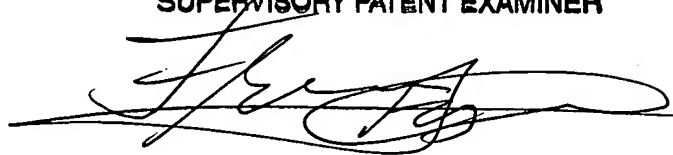
second Fridays 8am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Frantz Jules can be reached on (571) 270-1808. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MEK 12/21/2006   FRANTZ JULES
                                                        SUPERVISORY PATENT EXAMINER